

## CHAPTER 6

# WORK CENTER MANAGEMENT AND QUALITY ASSURANCE

To most personnel, an assignment to a supervisory position is a welcome challenge. They like the feeling of the added prestige, authority, and the responsibility that accompanies the assignment. However, when you do reach this level, you may soon realize that the position of Work Center Supervisor is not as easy as it may have seemed when viewed from another position.

Each day you may be confronted with many new problems and situations that require immediate action. If you know the duties, responsibilities, personnel, equipment, tools, and job priorities, it will be easier to function in a supervisory capacity. However, if you don't possess this knowledge, your troubles may multiply at an alarming rate.

The first part of this chapter will discuss some of the general duties and responsibilities of a supervisor and a few ways to prevent some problems before they are problems.

### THE WORK CENTER SUPERVISOR

**LEARNING OBJECTIVES:** Describe the primary concerns of the work center supervisor. Describe how the work center layout affects efficiency and safety.

To be a supervisor, you must clearly understand the terms *supervision* and *supervisor*. SUPERVISION can be defined as the act of guiding, directing, overseeing, evaluating, and controlling the activities of others in the accomplishment of an objective. A SUPERVISOR can be defined as the one who is responsible for and directs the work of others.

### THE SUPERVISORY POSITION

The job of supervising your personnel in a work center is a many sided task. Some of the techniques are learned through past experience; others will be learned during actual supervision. Still other techniques may be learned from self-study courses and technical publications.

A supervisor sets in motion the plans, schedules, and policies of his superiors. When you become a supervisor, you are primarily concerned with seeing that the job is done correctly, safely, and efficiently with no waste of materials. You will not necessarily perform the work yourself. You must know your personnel, know their limitations, assign them the work to be done, train them to do the best job possible, and, if necessary, direct them through the performance of the work. YOU assume the responsibility for seeing that the job is done, and done right. This role demands skill, common sense, and mutual respect.

### OBJECTIVES OF THE WORK CENTER SUPERVISOR

A specific list of duties and responsibilities can be made concerning only a specific position. However, listed below are some typical duties and responsibilities common to all work center supervisors:

- Get the right person on the job at the right time
- Use and place materials economically
- Ensure personnel and equipment safety
- Promote high morale
- Maintain quality work
- Keep accurate records and reports
- Maintain discipline within the work center
- Plan and schedule work
- Train personnel
- Procure the proper tools and equipment to do the work
- Inspect, preserve, and protect tools and equipment
- Give clear orders and directions
- Maintain liaison with other work centers
- Check and inspect jobs and workmanship
- Promote teamwork
- Maintain good housekeeping

By analyzing the typical duties and responsibilities listed above, you will find that they can be grouped into three broad objectives.

1. Operate with maximum efficiency and safety
2. Operate with minimum expense and waste
3. Operate free from interruption and difficulty

While these are the primary objectives of a work center supervisor, it is important for you to keep in mind that it also affords you the opportunity to gain practical experience toward eventual promotion to Chief Petty Officer.

*Q1. What is the primary concern of a work center supervisor?*

*Q2. The typical duties and responsibilities of the supervisor can be grouped into broad objectives. List these three objectives.*

## **OPERATING WITH MAXIMUM EFFICIENCY AND SAFETY**

The operational efficiency of a work center is dependent to a large extent upon how conveniently the work spaces and equipment are arranged. As equipment in your work center becomes obsolete, new equipment and new models are phased into the inventory. With this occurrence, efficiency naturally increases. This happens even in a poorly arranged work center, but the full work center potential may not be realized. It may not be economically feasible to make drastic changes in the work center spaces and equipment. However, if drastic changes result in improved use of equipment, personnel safety, and in generally improved working conditions, then the change should be made. The supervisor should make an assessment of the existing work center layout to ensure the most efficient arrangement possible.

The supervisor, by virtue of the position, has authority over other individuals. The supervisor tells them what to do, when to do it, and if necessary, how to do it. This authority alone is not enough to gain maximum effectiveness performance from the crew. A good supervisor must know the limitations and capabilities of subordinates to obtain the most efficient performance from them. The capabilities of the crew should be exploited. If at all possible, a well qualified person should be assigned to each job. Individuals that are less qualified but who are ready for advanced on-the-job training should be assigned to assist.

A good supervisor anticipates the eventual loss of experienced personnel through transfers, separations, etc. These things can be offset by establishing an effective and continuing training program. Use the *Naval Aviation Maintenance Program*, OPNAVINST 4790.2, manual as a guideline for this program. In addition to raising the skill level of the work center, the training program ensures that personnel otherwise qualified will be prepared for the next Navy-wide advancement examination.

A work center safety program must be organized and administered if the work center is to function efficiently. Current Navy directives and local policies are quite specific as to the establishment of safety training programs.

Accurate, complete, and up-to-date records are the primary factors in the efficient operation of a work center. This includes records of usage data, work accomplishments, and personnel qualifications. The most efficient record keeper is one who has enough information without having records and files bulging with useless and outdated materials.

As supervisor, you should schedule your workload in such a way that planned absences of key workers do not interrupt the daily routine. When scheduling the workload, keep in mind the skill level required for various tasks, and assign jobs to individuals in such a way that the work may still progress if any worker is unexpectedly absent.

The discussion thus far indicates that an efficient and safe work center is one in which the supervisor practices balanced supervision. Balanced supervision means applying sufficient attention to each phase of the supervisor's responsibilities. Do not emphasize production at the expense of safety or training. Also, do not become so concerned with the human element that production is neglected. Keep paperwork current and updated to prevent having to spend long periods catching up at the expense of other important interests. Always strive to place the proper emphasis on each phase of responsibility to promote work center efficiency and harmony.

*Q3. How does work center efficiency naturally increase?*

*Q4. How can an effective supervisor offset the loss of experienced personnel?*

## **OPERATING WITH MINIMUM EXPENSE AND WASTE**

**LEARNING OBJECTIVE:** Describe the supervisor's responsibility to operate with minimum expense and waste.

As a work center supervisor, you don't actually handle money, but you still must be aware of expenses. Remember that not only will such things as a misdirected effort, broken tool, wasted time, wasted material, and injuries actually add to your expenses, they also cut down on efficiency. You have the responsibility for properly ordering and accounting for spare parts and material. Impress upon your personnel the need for thrift in the use of these materials. Train your less experienced personnel to become cost-conscious without sacrificing efficiency.

## **OPERATING FREE FROM INTERRUPTION AND DIFFICULTY**

**LEARNING OBJECTIVE:** Describe the effects of judicious delegation of authority.

The success of this objective depends largely upon the extent to which the work center, files, test equipment and tools are maintained. Also, the skill level and training of assigned personnel must be considered in meeting this objective. Accurate tracking of test equipment requiring calibration, ensuring tools are in safe working condition, and up-to-date files and publications are also important factors. They contribute to an efficient job completion with minimal interruption or difficulty.

Smooth functioning of the work center may be further enhanced if you delegate authority to other responsible petty officers. Delegation of authority does not relieve you, as supervisor, of the overall responsibility for work accomplishment. It is primarily a means of relieving you of details. If you become too involved with details, you can lose your effectiveness as a supervisor. If your work center can run smoothly and efficiently under normal conditions without your personal directions and efforts, (for a reasonable period of time) your delegation of authority to other members of the crew has been successful.

- Q5. Which of the three broad objectives are affected by wasted materials?*
- Q6. Describe the primary purpose of delegation of authority.*

## **PLANNING WORK CENTER ARRANGEMENT**

**LEARNING OBJECTIVES:** Identify the two types of maintenance that concern the supervisor. Describe the purpose of the daily maintenance meeting.

It is entirely possible that you may never have the opportunity to plan or assist in planning a work center in a new facility. In almost every case, the supervisor takes charge of an existing functional work center. If your unit is moved to a new base or facility, you are usually assigned to spaces already equipped or laid out for your specific needs. In either case, as the supervisor, you should evaluate the work center's layout. This reevaluation of the work center's layout should include researching applicable allowance lists to determine if the work center equipment allowances have been updated or changed in any way. If changes have been made and the equipment is not available, you should initiate efforts to procure it immediately. There is no use in relocating work center equipment if there are lighting, wiring, ventilation, or plumbing changes to be made if improved replacement models are authorized and available.

### **Purpose of the Work Center**

A basic consideration in planning a work center layout is the purpose of the work center. When more than one working space is available, the supervisor must decide which space is best suited for a particular job. For example, if two spaces are identical in size, one may be completely unacceptable for performing hydraulic sample patch tests, yet may be perfectly suited for a drill press, vise, and workbench.

The general function of the work center must be considered in the allocation of space and equipment. The ideal arrangement contains enough space to have workbenches, special tools, parts and tool stowage space, technical publication stowage, and ample space for the workers. Since this is not always possible, especially aboard ship, the supervisor must decide which of these is most important and what can be sacrificed. It may be decided that all of the toolboxes and special tools should be located in a central toolroom. At the intermediate level, the supervisor may simply have to decide which work centers are to be combined. However, the decision to combine different maintenance functions should be based on

safety, economy, functional compatibility, and convenience.

### **Arrangement**

The arrangement of the furnishings should be made on the basis of use rather than appearance. Moving shop-installed equipment into an out-of-the-way corner may improve the appearance of the space but greatly reduces the efficiency of the personnel using the equipment. It may also create a safety hazard. A good rule to follow is to locate the equipment where it can be safely used by the greatest number of authorized persons with minimum effort in the least amount of time.

Work tables and benches should be positioned with respect to fixed equipment so that the equipment most often used is most quickly and easily reached. Electrical and compressed air outlets should be readily available to workbenches. Needless delays are caused by having to rig unnecessarily long connections from poorly located outlets.

You should give special considerations to the installation of special lighting, such as explosionproof, vaporproof, or interference-free lights, near workbenches where specific or intricate work is to be performed. Another special consideration is that of ventilation. All work spaces should have adequate ventilation under all conditions that are expected to exist in that work space.

The use of paint in various colors to emphasize portions of intricate machinery for safety and reflective purposes is known as dynamic painting. Painting in this category should be kept in an efficient state for maximum effectiveness; however, this type of paint should not be used for normal building maintenance.

The work center layout plan should have a provision for an information or bulletin board. Safety posters, maintenance posters, instructions, notices, plan of the day (POD), and such other information as appropriate should be placed on this board. This board should be located in a prominent place in the work center, preferably near the entrance where everyone assigned must pass at sometime during the day. Material on the bulletin board should be kept current, expired notices removed promptly, the current POD posted early, and safety posters rotated periodically. If the same material is presented in the same format day after day, personnel begin to ignore the board. A new arrangement will arouse curiosity and interest.

### **Scheduling and Assignment of Workload**

Your most important concern as a supervisor is the assignment and accomplishment of the scheduled and unscheduled workload.

Scheduled maintenance can be defined as maintenance that is required by hours, calendar periods (days or weeks), and starts. This type of maintenance is always anticipated and planned. By tracking flight or operating hours, maintenance control knows exactly when a particular aircraft is due for a phase inspection. It is also easy to determine when an aircraft or piece of equipment is due for a 28-day inspection.

Unscheduled maintenance is defined as maintenance that occurs on aircraft or equipment other than scheduled. For example, an aircraft develops a hydraulic fluid leak on preflight, or perhaps while performing scheduled maintenance on an aircraft engine, a worker discovers a cracked or chaffed line. The repair or replacement of that line is unscheduled maintenance.

As the work center supervisor, you should attempt to coordinate the installation of technical directives (TDs) and correct minor discrepancies to coincide with scheduled maintenance. You may not be authorized to wait until the next scheduled maintenance period for the installation of a TD; the assigned category (priority) determines the maximum allowable time period for compliance with the directive. A directive classified IMMEDIATE ACTION may be issued with instructions to be completed "prior to further use of equipment" or "prior to next flight"; a directive classified ROUTINE ACTION must be accomplished within 18 months of the date of issue.

The supervisors objective is the satisfactory completion of assigned tasks in a reasonable amount of time, using available personnel and materials as efficiently as possible. To achieve this objective, the supervisor must become skilled in estimating the amount of time required for each task and the number of workers required. To be able to estimate effectively, you, as the supervisor, must be familiar with the task and know the capabilities of your personnel. You must realize the importance of assigning qualified and unqualified persons to the same job, when possible. Allow for planned interruptions, and yet do not operate on so tight a schedule that minor, unplanned

interruptions completely disrupt the maintenance effort.

*Q7. Describe scheduled and unscheduled maintenance.*

### **Estimating Time and Personnel Requirements**

Estimating times for completion of maintenance tasks will be one of the supervisors responsibilities. The quality and quantity of personnel assigned to perform these tasks directly affect the time required for completion. Other items that affect time are the type and complexity of maintenance, the availability and condition of materials, work center tools and equipment, and working conditions or job site (in-shop, cold flight deck, etc.).

Probably the most important single aid in estimating time and personnel requirements for maintenance tasks is a JOB PLAN. Within an office, a work center, or on the line, job planning is one of the most important functions of the supervisor. The person who allows an organization to run haphazardly, who never thinks ahead, who is never ready for an emergency or extra workload, and who does not delegate work or trust subordinates is not a good supervisor.

Proper planning saves time, reduces cost, and makes the work easier, safer, and more pleasant for everyone. Proper planning can eliminate friction and confusion, as well as make better use of in-port periods for tasks that cannot be performed underway; it also frees the supervisor from petty details. Planning expedites the work, eliminates "bottlenecks," and makes the supervisor's job easier.

The following hints can help you as a supervisor. In planning a job, use the BIG SIX—WHAT, WHY, WHERE, HOW, WHO, and WHEN.

1. WHAT is the task? What does it involve and what special tools may be required?
2. WHY is the work to be done? (This helps to establish priorities.)
3. WHERE can the job be done? (In-shop, hanger bay, etc.)
4. HOW is the job done? (Electrical or air requirements, etc.)
5. WHO is affected? (Are there other work centers involved? Who is the best qualified?)

6. WHEN is the job to be started and what are the time constraints?

It is not necessary to have an answer to all of these questions; however, the more you can answer, the better plan you will have. As supervisor, start each new shift by checking over the work to be done; plan for maximum use of manpower, equipment, and material. Also, ensure that you attend the maintenance meeting with other work center supervisors. Periodically during the shift, make checks to ensure that work is progressing as planned.

### **Daily Maintenance Meeting**

The daily maintenance meeting is one of the best tools for ensuring a smooth flow of information about maintenance between shifts and other supervisors. This meeting allows all the supervisors within your department or division to brief the maintenance chief on the status of equipment, components, or aircraft that currently have ongoing work or are scheduled to have maintenance performed. It also allows supervisors to coordinate time frames for sharing certain facilities, equipment, or electrical power requirements. In addition, these maintenance meetings may bring to the attention of the maintenance chief items of material that may be difficult to obtain. It may identify certain document numbers that require "hand massaging" by the supply chief.

*Q8. What is the most effective tool for ensuring a smooth flow of information regarding maintenance between shifts, other work centers, and maintenance control?*

### **Personnel Work Assignments**

Rotate work assignments so that each person in your work center can develop skills in all phases of maintenance. Personnel in lower paygrades should be encouraged to get involved in many different types of maintenance. A worker who understands a system or aircraft will be a better troubleshooter. Additionally, when you rotate work assignments and encourage a wide range of maintenance skills, the work becomes more interesting to the worker. More interest, more quality! If one highly skilled mechanic performs all of the work of a certain type, the supervisor and the work center would suffer if that technician were to transfer, be assigned TAD, or even take a period of well earned leave; this is another reason for rotating work assignments. Assign less experienced workers to work with the skilled mechanics so they can become

proficient at a particular skill. This also permits each person to broaden his/her knowledge.

### **Allowing for Planned Interruptions**

During an average workday, personnel will need to leave their work center for various personal reasons; this may easily interrupt the scheduled workload. Some reasons can be anticipated and some cannot. Among those that can be anticipated are training lectures, inspections, immunization schedules, rating examinations, meals, watches, and other military duties.

Before assigning a task, the supervisor should determine what delays can be anticipated. It may be possible to arrange assignments so that work interruptions are held to a minimum. It is much easier for the same technician to complete a task that he started than for another to pick up where the first worker left off. If interruptions cannot be avoided, the supervisor should allow for these predictable delays when estimating completion times.

## **QUALITY ASSURANCE**

**LEARNING OBJECTIVE:** State the purpose and concept of Quality Assurance.

When you progress up the ladder of responsibility in aviation maintenance, you become more involved in quality assurance (QA). You may be assigned as a QA representative or a collateral duty inspector. Therefore, you must become quality conscious.

The quality assurance (QA) division determines deficiencies, analyzes discrepancy trends, prescribes inspection procedures, and determines the quality of maintenance accomplished. The division also provides follow-up action and functional guidance to stimulate QA at the departmental level.

**NOTE:** At the time of publication of this training manual, the NAMP Policy Committee has determined that Naval Aviation Maintenance Program Standard Operating Procedures (NAMPSOP) will take the place of Maintenance Instructions (MIs) throughout naval aviation. MIs are mentioned frequently throughout this chapter as they are still referred to in the NAMP. The next update of the NAMP may reflect the use of NAMPSOP rather than local MIs. Refer to OPNAV NOTICE 4790 for further information regarding NAMPSOP.

## **CONCEPTS OF QUALITY ASSURANCE**

The QA concept is fundamentally the prevention of the occurrence of defects. This includes all events from the start of maintenance operations until their completion. Quality is the responsibility of all maintenance personnel. Achievement of quality assurance depends on prevention, knowledge and special skills.

Prevention of the occurrence of defects relies on the principle of eliminating maintenance failures before they happen. This principle extends to safety of personnel, maintenance of equipment, and virtually every aspect of the total maintenance effort. Prevention is concerned with regulating events rather than being regulated by them.

Knowledge is obtained from factual information. This knowledge is acquired through the proper use of data collection and analysis programs. The maintenance data collection system provides maintenance managers limitless quantities of factual information. Correct use of this information gives management the knowledge needed to achieve maximum readiness of aircraft and weapons systems.

Special skills, normally not possessed by production personnel, are required by a staff of trained personnel for the analysis of data and supervision of QA.

The terms *inspection*, *quality assurance*, and *audit* (as used in this context) have distinct meanings and should be used accordingly. The following definitions are provided to clarify the differences in these terms.

*Inspection* is the examination (including testing) of supplies and services, including raw material, documents, data, components, and assemblies. Inspection is done to determine if the supplies and services conform to technical requirements.

*Quality assurance* is a planned and systematic pattern of actions necessary to provide confidence that the product will perform satisfactorily in service. QA is also the monitoring/analyzing of data to verify the validity of these actions.

An *audit* (as it applies to QA) is a periodic or special evaluation of details, plans, policies, procedures, products, directives, and records.

QA provides an efficient method for gathering, analyzing and maintaining information on the quality characteristics of products, on the source and nature of

defects, and their impact on the current operation. It permits decisions to be based on facts rather than intuition or memory. It provides comparative data that will be useful long after the details of the particular times or events have been forgotten. QA requires both authority and assumption of responsibility for action.

A properly functioning QA points out problem areas to maintenance managers so they can act to accomplish the following:

- Improve the quality, uniformity, and reliability of the total maintenance effort.
- Improve the work environment, tools, and equipment used in the performance of maintenance.
- Eliminate unnecessary man-hour and dollar expenditures.
- Improve the training, work habits, and procedures of maintenance personnel.
- Increase the quality and value of reports and correspondence originated by the maintenance activity.
- Distribute technical information more effectively.
- Establish realistic material and equipment requirements in support of the maintenance effort.
- Support the Naval Aviation Maintenance Discrepancy Reporting Program.
- Support the Foreign Object Damage (FOD) Prevention and Reporting Program.

QA serves both management and production equally. Management is served when QA monitors the complete maintenance effort of the department and furnishes the factual feedback of discrepancies and deficiencies. In addition, it acts to improve the quality, reliability, and safety of maintenance. Production is served by having the benefit of collateral duty inspectors who are formally trained in inspection procedures; it is also served by receiving technical assistance in resolving production problems. The introduction of QA to the maintenance function does not relieve production personnel of the basic responsibility for quality work; instead, that responsibility is increased by adding accountability. This accountability is the essence of QA.

## RESPONSIBILITIES FOR QUALITY OF MAINTENANCE

The commanding officer is responsible for the inspection and quality of material within a command and the full cooperation of all hands to meet this responsibility. The responsibility for establishing a successful program to attain high standards of quality workmanship cannot be discharged by merely creating a QA division within a maintenance organization. To operate effectively, this division requires the full support of everyone in the organization. It is not the instruments, instructions, and other facilities for inspection that determine the success or failure in achieving high standards of quality; it is the frame of mind of all personnel.

Quality maintenance is the objective. The supervisor must know that high quality work is vital to the effective operation of any maintenance organization. To achieve this high quality work, each person must know not only a set of specification limits, but also the purpose for those limits.

The person with the most direct concern for quality workmanship is the production supervisor. This concern stems from the supervisor's responsibility for the proper professional performance of assigned personnel. A production supervisor is responsible for the assignment of a collateral duty inspector (CDI) at the time work is assigned. This procedure allows the inspector to conduct the progressive inspection required so the inspector is not then confronted with a job already completed, functionally tested, and buttoned up. The completion of production work is not a function of the QA division. Production personnel in the added role of inspector cannot certify inspection of their own work.

Direct liaison between the QA division and production divisions is a necessity and must be energetically pursued. Although the QA officer is responsible to the aircraft maintenance officer (AMO) for the overall quality of maintenance within the department, division officers and work center supervisors are responsible for ensuring that required inspections are conducted and that high quality workmanship is attained.

- Q9. What is the purpose of the quality assurance division?*
- Q10. The prevention of the occurrence of defects relies on what principle?*

- Q11. What are the three factors that ensure the achievement of quality assurance?*
- Q12. State the definition of a Q/A audit.*
- Q13. What does the frame of mind of all personnel assigned to a department determine?*
- Q14. When must the production supervisor assign a collateral duty inspector to a task?*

## **QUALITY ASSURANCE DIVISION RESPONSIBILITIES AND ORGANIZATION**

**LEARNING OBJECTIVE:** Describe the quality assurance division's responsibilities and its organization.

The quality assurance responsibilities assigned to the QA division include the following:

- Maintain the central technical publications library for the department, including technical directives (TDs). Control classified technical publications for the department. Ensure that each division or branch receives all publications applicable to its respective work areas and that these are kept current and complete.
- Establish qualification requirements for quality assurance representatives (QARs), collateral duty quality assurance representatives (CDQARs), and collateral duty inspectors (CDIs). Review the qualifications of personnel nominated for these positions, and endorse these nominations to the department head.
- Periodically accompany CDIs during scheduled and unscheduled maintenance tasks to observe their proficiency.
- Ensure that all work guides, checklists, check sheets, maintenance requirements cards, etc., used to define or control maintenance operations are complete and current before they are issued to crews or individuals.
- Review all engineering investigation (EI) requests, quality deficiency reports (QDRs), technical publications deficiency reports (TPDRs), hazardous material reports (HMRs), hazard reports (HRs), and aircraft discrepancy reports (ADRs) to ensure that they are accurate, clear, concise, and comprehensive before mailing.
- Monitor inspections of precision measuring equipment (PME) to ensure compliance with calibration intervals and safety instructions.
- Perform inspections of all maintenance equipment and facilities to ensure compliance with fire and safety regulations; that satisfactory environmental conditions exist; that equipment operators and drivers are properly trained, qualified, and licensed; and that equipment is maintained in a safe operating condition.
- Provide a continuous training program in techniques and procedures pertaining to the conduct of inspections. When directed or required, provide a technical task force to study trouble areas and submit recommendations for corrective action.
- Use information from the maintenance data reports (MDRs) and NALCOMIS reports to develop discrepancy trends, and to identify failure areas or other maintenance problems.
- Review source documents and periodic inspection records, and note recurring discrepancies that require special actions.
- Maintain liaison with contractors via the contracting officer's representative (COR), Naval Aviation Engineering Services Unit (NAESU), Naval Aviation Depot Operations Center (NAVAV-NDEPOTOPSCEN), and other available field technical services. Establish and maintain liaison with other maintenance and rework activities to obtain information on ways to improve maintenance techniques, quality of workmanship, and QA procedures.
- Obtain and use appropriate inspection equipment, such as lights, borescopes, mirrors, magnifying glasses, fluorescent inspection kits, tensiometers, pressure gauges, and carbon monoxide testers. Ensure that production personnel have such equipment available, in operating condition, calibrated, if applicable, and in use.
- Ensure that established standard procedures are observed for conducting scheduled and unscheduled inspections, ground tests and bench checks of components, including engines. Periodically (at a minimum, once a quarter) accompany check crews or plane captains during inspections. Check the performance of their work to ensure that the desired quality level is obtained.
- Ensure check pilots and aircrew members are briefed before the post maintenance functional check flight (FCF) so the purpose and objective of the flight are clearly understood. After completion of the FCF,



conduct a debrief with the check pilot, aircrew members, a maintenance control representative, and applicable work center representatives for compliance with objectives outlined on the FCF checklist, and to clarify discrepancies noted. The completed check flight checklists are retained in the aircraft maintenance files for a minimum of 6 months, or one phase cycle, whichever is greater.

- Ensure the configuration of aircraft, aeronautical components, and support equipment (SE) is such that all essential modifications have been incorporated.

- Ensure an inspection is conducted on all equipment received for use, returned for repair, or held awaiting repair to verify that its material condition, identification, packaging, preservation, and configuration are satisfactory; and, when applicable, that shelf-life limits are not exceeded.

- Review all incoming technical publications and directives to determine their application to the maintenance department.

- Prepare or assist in the preparation of maintenance instructions to ensure that QA requirements are specified (until *Naval Aviation Maintenance Program Standard Operating Procedures*, NAMPSOP, Volume V, of OPNAVINST 4790.2 is issued).

- Maintain current assignments of personnel qualified for specific QA responsibilities. Activities using Naval Aviation Logistics Command Management Information System (NALCOMIS) should refer to the User's Manual for specific procedures.

- Be responsible for the effective monitoring of the Enhanced Comprehensive Asset Management System (ECAMS).

- Be responsible for effective monitoring of hazardous material and hazardous waste procedures within the aircraft maintenance department.

The QA division is organized with a small group of highly skilled personnel. These permanently assigned personnel, under the QA officer, are responsible for conducting and managing the QA effort of the department. The maintenance personnel assigned to the QA division are known as QARs. To obtain more efficient use of the information collected by the aviation Maintenance Data System (MDS) and to increase the scope of QA for commands still operating under VIDS, a qualified data analyst is assigned to the QA/A division. The primary duties of the data analyst or NALCOMIS system administrator

are discussed briefly in Chapter 1 and are outlined specifically in OPNAVINST 4790.2.

The number of personnel assigned to the QA division varies among activities, depending on the size of the unit and number of work shifts. When activities with four or less aircraft assigned or small OMDs elect to organize a QA division, the QA officer and the QA supervisor will be permanently assigned. Usually, in a small OMD under a one work center concept, qualified personnel are designated as CDQARs to carry out the QA verification functions.

*Q15. At a minimum, how often must plane captains have their qualifications monitored by Q/A?*

*Q16. Why must a QAR brief the check pilots and aircrew prior to a functional check flight (FCF)?*

*Q17. What division is responsible for reviewing all incoming technical publications and directives to determine their application to the maintenance department?*

*Q18. In relation to the organization of a quality assurance division, what determines the number of assigned personnel?*

## **QUALITY ASSURANCE REPRESENTATIVES**

**LEARNING OBJECTIVE:** Describe the functions and qualifications of QARs, CDQARs, and CDIs.

The need for quality control requires that only highly skilled maintenance personnel be designated as QA representatives/inspectors. QARs and CDIs must be highly qualified personnel with the ability to ensure quality of maintenance within their technical areas. Under this concept, the personnel in the production divisions are ultimately responsible for the quality of work performed in the department. The QA division monitors the production and ensures that high quality workmanship is accomplished by maintenance personnel and that specifications and quality standards are met. QA is concerned with the completeness and adequacy of inspections, and emphasis is placed on the thoroughness of the inspection rather than the number of units inspected.

### **Quality Assurance Representatives Functions**

The nucleus of the QA division is a group of QARs. These permanently assigned representatives

are, in most activities, supplemented by designated CDIs. The QARs perform the following functions:

- Review incoming technical publications and directives to determine their application to the maintenance department.
- Assist in the certification of production personnel.
- Participate as members of technical task forces to investigate trouble areas and recommend corrective actions.
- Ensure QA objectives and requirements are defined during MI preparation (until completely under the NAMPSOP).
- Review qualifications of personnel nominated to become CDIs or CDQARs, and provide recommendations as appropriate.
- Investigate Hazard Reports (HRs), as defined in OPNAVINST 3750.6 (series), applicable to the unit that are received from other activities. Assist in the preparation of NAMDRP reports. Review all report entries for adequacy and correctness before distribution.
- Provide technical assistance to CDIs and production personnel. Periodically accompany CDIs on assigned inspections and evaluate their performance.
- Review MDRs, NALCOMIS reports, Maintenance Action Forms (MAFs), NAMDRP reports, and HRs to determine discrepancy trends and specific problem areas in areas of responsibility.
- Upon completion of tasks that require certification by QARs, conduct final inspections.
- Monitor the calibration or certification status of equipment, tools, and personnel used in each work center.
- Coordinate with the analyst in the development of discrepancy trends and such charts and graphs that are necessary to depict quality performance.
- Maintain liaison with contractors via the COR NAESU, NAVAVNMAINTOFF, cognizant field activities (CFAs), and other available field technical services. Establish and maintain liaison with other maintenance and rework activities to obtain information for improving maintenance techniques, quality of workmanship, and QA procedures.
- Develop checklists for auditing work centers, specific maintenance programs, and processes that require monitoring by QA.

- If flight control malfunctions occur, comply with the applicable type/model/series conditional maintenance requirements cards.

- Perform QA inspections, ensuring each inspection includes an examination of the work area for sources of potential FOD. Ensure contractor and field maintenance teams are briefed about the FOD Prevention Program requirements and reporting procedures.

### **Quality Assurance Representative Qualifications**

All personnel considered for selection as a QAR should possess the following qualifications:

- Senior in grade and experience. This means a petty officer (E-6 or above) with a well-rounded maintenance background. Unusual circumstances may temporarily require the use of other than E-6 or above personnel. Under such circumstances, the most experienced personnel available, as determined by the AMO, may be temporarily designated as a QAR.
- Fully developed skills and experience related to the technical-fields under their cognizance.
- The ability to research, read, and interpret drawings, technical manuals, and directives.
- The ability to write with clarity and technical accuracy.
- Stability and excellence in performance.
- The motivation and personal desire to develop greater knowledge of his or her technical specialty.
- An observant, alert, and inquiring nature.
- The ability to work with others.

Billet descriptions are prepared for QA division personnel to ensure that all QA functions and responsibilities, covered in the Naval Aviation Maintenance Program (NAMP), are assigned.

### **COLLATERAL DUTY QUALITY ASSURANCE REPRESENTATIVES**

When CDQARs are assigned to work centers or production divisions, they function in the same capacity as QARs and must meet the same minimum qualification requirements as their QA division counterparts. When CDQARs are assigned to work centers or production divisions because of temporary shortages of skills, and these shortages have not been

alleviated within 90 days, a letter must be submitted to the aircraft controlling custodian (ACC), through the chain of command, advising of the personnel problems, action taken, and intent to continue the assignments. ACCs will take action to authorize activities to continue or to curtail the assignment. The letter will contain name, rate, Navy enlisted classification (NEC), and functional area.

Permanent CDQARs may be assigned to organizational maintenance activities that have minimal ordnance delivery in their assigned mission, and where manning the armament billet would not be justified. An organizational activity may also designate a permanent aircrew personal protective/survival equipment CDQAR and an egress/environmental systems CDQAR when the activity's aircraft are not equipped with ejection seats. Permanent CDQARs also may be designated to supplement multiple work shifts or detachments, provided QA division billets are fully manned. Permanent CDQARs may also be assigned when the activity maintains four or less aircraft and is organized according to guidelines set forth in the NAMP.

## **COLLATERAL DUTY INSPECTORS**

The CDIs assigned to the production or maintenance training unit (MTU) work centers inspect all work and comply with the required QA inspections during all maintenance actions performed by their respective work centers. They are responsible to the QA officer when performing these functions. CDIs spot check all work in progress. This requires them to be familiar with the provisions and responsibilities of the programs that QA manages and monitors.

The QA division establishes minimum qualifications for personnel selected for CDI. Division officers are responsible for ensuring that sufficient qualified personnel are nominated for CDI to comply with QA inspections required during all maintenance actions. Due to the importance and responsibility of duties performed by CDIs, division officers and work center supervisors must carefully screen all candidates for these assignments. CDIs must demonstrate their knowledge and experience on the particular type of equipment by successfully passing a locally prepared written test administered by the QA division. In addition, a locally prepared oral or practical examination may be administered. When a CDI is transferred from a production work center, his or her designation as a CDI for that work center remains valid

for only as long as his or her qualifications are current, as judged by the cognizant division officer.

**NOTE:** A CDI will NOT inspect his or her own work and sign as inspector.

## **QUALITY ASSURANCE REPRESENTATIVE TRAINING**

The QA officer ensures that personnel assigned to perform QA functions receive continuous training in inspecting, testing, and quality control methods specifically applicable to their area of assignment. The QA officer also ensures that QARs receive cross training to perform those QA functions not in their assigned area. This training should include local training courses, on-the-job training (OJT), rotation of assignments, personnel qualifications standards (PQS), and formal schools. According to OPNAVINST 4790.2, QARs should attend a Fleet Aviation Specialized Operational Training Group Detachment QA course.

Division officers are responsible for establishing and maintaining training programs for production personnel involved with QA functions. This responsibility includes training in troubleshooting, testing, and inspection techniques; ensuring that operations requiring certified operators are accomplished; and that steps are taken to qualify and certify affected personnel.

QARs, CDQARs, and CDIs must be designated in writing by the AMO. The only deviation authorized allows the officer in charge (OIC) of a detachment to designate QA personnel provided (1) the deployment period is more than 90 days, and (2) all procedures and requirements for designating QA personnel are accomplished by the detachment. See figure 6-1 for a sample of a Quality Assurance Representative/Inspector Recommendation/Designation form.

## **ISSUE AND CONTROL OF QUALITY ASSURANCE STAMPS**

QA stamps may be used in place of a signature. They are required in an intermediate maintenance activity/aircraft intermediate maintenance department (IMA/AIMD), but are optional at organizational-level maintenance. In an IMA/AIMD, all QARs, CDQARs, and CDIs receive QA stamps.

At the organizational level, QA stamps are to be used by QARs and CDQARs only. These open-purchased, numbered, impression stamps, which

# **QUALITY ASSURANCE REPRESENTATIVE/INSPECTOR RECOMMENDATION/DESIGNATION**

CANDIDATE NAME

RATE

## **I. DIVISION OFFICER RECOMMENDATION**

In accordance with the current OPNAVINST 4790.2 the above named person is recommended for:

☐ QAR

☐ CDQAR

☐ CDI

FOR: (AIRCRAFT / SYSTEM / WORK CENTER / ETC.)

DIVISION OFFICER TYPED NAME AND RANK

SIGNATURE

DATE

## **II. QUALITY ASSURANCE/ANALYSIS OFFICER ENDORSEMENT.**

The candidate has been examined in accordance with the current OPNAVINST 4790.2 and has passed all requirements satisfactorily. Recommend approval.

Q/A OFFICER TYPED NAME AND RANK

SIGNATURE

DATE

## **III. AIRCRAFT MAINTENANCE OFFICER ACTION**

☐ DESIGNATED

☐ NOT DESIGNATED

AIRCRAFT MAINTENANCE OFFICER TYPED NAME

SIGNATURE

DATE

## **IV. DESIGNEE RESPONSIBILITY**

# **SAMPLE**

I UNDERSTAND MY RESPONSIBILITY AS SET FORTH HEREIN:

"When performing inspections, I am considered to be the direct representative of the Commanding Officer for ensuring safety of flight of the item concerned. I will not permit factors, such as operational desires, maintenance consideration, personal relations or the approach of liberty to modify my judgment. By signing an inspection report, I am certifying upon my own individual responsibility that the work involved has been personally inspected by me, that it has been properly completed and is in accordance with current instructions and directives; that it is satisfactory; that any related parts or components which may have been removed by the work are properly replaced and all parts are secure; and that the work has been performed in such a manner that the item is completely safe for flight or use."

CANDIDATE TYPED NAME AND RANK

STAMP NO.

SIGNATURE

DATE

OPNAV 4790/12 (Rev. 8-90) S/N 0107-LF-010-5700

Original to:  
Copy to:

Individual  
Quality Assurance/Analysis Officer  
Division Officer

AMR00091

Figure 6-1.—Quality Assurance Representative/Inspector Recommendation/Designation (OPNAV 4790/12).

identify the inspector, are used in place of signatures to certify completion of inspections on maintenance documents and in place of initials where use of initials is specifically authorized. The QA division closely controls these stamps. Once a QA stamp is turned in by an inspector, either due to transfer or loss of qualifications, it may not be reassigned within a period of 3 months.

- Q19. Who has the responsibility to review MDRs, NALCOMIS reports, and VIDS/MAFS to determine discrepancy trends and specific problem areas?*
- Q20. Under normal circumstances, what paygrade is usually assigned as a QAR?*
- Q21. How long may a CDQAR be assigned to a work center without having to notify the aircraft controlling custodian?*
- Q22. When may a CDI inspect his own work and sign as inspector?*
- Q23. When a deployment period is more than 90 days and all requirements for assigning QA personnel have been met by the detachment, who may designate QA personnel?*
- Q24. What is used to annotate an inspection on a VIDS/MAF in place of a signature at an AIMD?*

## **QUALITY ASSURANCE INSPECTIONS**

**LEARNING OBJECTIVE:** Identify the types of quality assurance inspections.

QA inspections are essential elements of an effective QA program. To comply with assigned responsibilities, QA personnel perform the following QA inspections:

- Mandatory QA inspections specified in maintenance instruction manuals (MIMs), TDs, and local MIs.
- Those inspections required to be conducted by QA personnel during and/or upon the completion of a maintenance action.
- QA maintenance requirements cards (MRCs) provided for all maintenance tasks that, if improperly performed, could cause equipment failure or jeopardize the safety of personnel. The "QA" appearing on MRCs signifies that a QA function is required. Local commands must determine and designate, in writing, by annotating the master and the work center decks,

whether a QAR, CDQAR, or CDI performs the QA functions listed in the MRCs. QA inspections are performed during or after task performance.

If the proper performance of a task cannot be determined after the task is completed, a QA inspection is required while the task is being performed. Work cannot proceed past the inspection point indicated on the task MRC without the approval of the inspector. For these inspections, the notation "QA Required" appears on the MRC containing the task. If the proper performance of a task can be determined by a visual inspection after the task was completed, a QA inspection is required after task completion.

Each work center sets up procedures to ensure that the QA inspection requirements are complied with during all maintenance evolutions. With these procedures developed, inspections normally fall into one of the three following inspection areas.

- **RECEIVING OR SCREENING INSPECTIONS.** These inspections apply to material, components, parts, equipment, logs and records, and documents. CDIs normally conduct these inspections to determine the condition of material, proper identification, maintenance requirements, disposition, and accuracy of accompanying records and documents.

- **IN-PROCESS INSPECTIONS.** These inspections are specific QA functions that are required during the performance of maintenance requirements and actions when satisfactory task performance cannot be determined after the task has been completed. When designated, these inspections include witnessing application of torque, functional testing, adjusting, assembling, servicing, installation, and similar tasks.

- **FINAL INSPECTIONS.** These inspections comprise specific QA functions performed following the completion of a task or series of tasks. QA inspection of work areas following task accomplishment by several different personnel is an example of a final inspection.

### **In-process and Final Inspections**

CDIs normally conduct these inspections; however, QARs and CDQARs must conduct in-process and final inspections of all tasks that require the aircraft to have a functional check flight (FCF) in an O-level maintenance activity. QARs and CDQARs also must perform inspections of maintenance tasks involving egress systems, personnel parachutes, and flotation devices when the affected mechanism or function of that equipment is not reinspected or

functionally tested before flight. Aircraft maintenance officers determine which additional maintenance tasks require QAR or CDQAR level in-process and final inspections. Only those personnel designated as QARs, CDQARs, and CDIs are authorized to sign as inspector for QA inspection requirements. While not all QA inspections conducted during the various phases of maintenance require a signature, all specified QA inspections are conducted, witnessed, and/or verified by designated QA personnel.

### **Quality Assurance Inspection Sign-offs**

The QA inspector who actually performs the inspection of the standards of the work signs the "INSPECTED BY" block on all VIDS/MAFs. The sign-off on documents that do not involve an actual inspection (for example, a control document for a phase inspection) is a certification that all QA functions associated with the inspection have been performed and that the designated QA inspectors received and accepted all necessary documentation. In activities using NALCOMIS, refer to the *NALCOMIS User's Manual* for specific details and procedures related to QA inspection sign-offs.

**NOTE:** Do not be tempted by operational tempo or commitment to sign off any maintenance task without physically inspecting the job.

### **In-flight Maintenance Sign-offs**

In the absence of designated QA personnel during in-flight maintenance, the senior aircrew maintenance person is authorized to sign as inspector. He or she inspects the work performed from a technical standpoint to ensure that sound maintenance procedures were followed and that areas where maintenance was performed are free of foreign objects. If the discrepancy involves safety of flight, a QAR inspects the repairs upon return to home base. This is in addition to the inspection already performed by the in-flight personnel.

### **Transient Maintenance Sign-offs**

In the absence of designated QA expertise during transient maintenance, the pilot in command is authorized to either sign as inspector or designate a qualified member of the aircrew to function in this capacity. The pilot or person designated inspects the work performed from a technical standpoint, ensures that sound maintenance procedures were followed,

and that the areas where maintenance was performed are free from foreign objects. If the discrepancy involves safety of flight, a QAR reinspects the repairs upon return to home base.

- Q25. What person or activity decides if a CDI, CDQAR, or QAR is to perform inspections required by "QA " annotated on an MRC?*
- Q26. During a maintenance evolution, inspections normally fall into three categories. What are the three categories?*
- Q27. QAR and CDQAR are required to conduct in-process and final inspections of all maintenance tasks that require what actions?*
- Q28. When must a QAR reinspect in-flight maintenance sign-offs?*

## **QUALITY ASSURANCE PROGRAMS**

**LEARNING OBJECTIVE:** Describe the programs that are managed and monitored by quality assurance.

The QA division manages or monitors many different types of programs. Until Volume V of the NAMP, OPNAVINST 4790.2 (NAMPSOP), is distributed, local MIS should be prepared by your activity for each program

## **QUALITY ASSURANCE MANAGEMENT**

Currently local maintenance instructions contain procedures for implementing management programs that contain information, techniques, local policy procedures, and methods to manage each program. Soon NAMPSOP will replace these MIs. The programs managed by QA are covered in the following paragraphs.

### **Quality Assurance Audits**

Audits are essential elements of an effective QA program. Audits provide an evaluation of performance throughout the department and serve as an orderly method of identifying, investigating, and correcting deficiencies. They also evaluate various maintenance tasks and procedures. Audits monitor those specific maintenance programs assigned to QA for monitoring. Audits fall into two categories—work center audits and special audits.

**THE WORK CENTER AUDIT.**—QA conducts these audits quarterly to evaluate the overall quality performance of each work center. As a minimum, QA evaluates the following items:

- Personnel and skills
- Technical publications
- Compliance with NAMP programs and MIs (or NAMPSOP)
- Adherence to directives, procedures, inspections, and applicable end-to-end testing
- Adequacy and availability of written process, test, and inspection procedures
- Availability, calibration status, and proper use of test and measuring devices
- Accuracy and proper use of the Maintenance Data System (MDS)
- Certification of personnel performing special processes, such as nondestructive inspection (NDI) and welding
- Designation of plane captains, if applicable
- Licensing of personnel for taxi, turnup, and operation of SE
- Handling, packaging, protection, and storage of aeronautical material
- Cleanliness and condition of working spaces
- Compliance with fire and safety regulations
- Configuration of aircraft, components, and SE
- Accuracy of equipment logs and records
- Material condition of aircraft and SE
- Validation of VIDS boards and VIDS operating procedures if operating using VIDS. If operating NALCOMIS OMA, review and verify newly initiated. MAFs by using the work center workload report; if NALCOMIS IMA, validation of current job status
- Compliance with the FOD prevention program
- Industrial Radiation Safety Program

**SPECIAL AUDITS.**—In addition to scheduled work center audits, QA conducts special audits to evaluate specific maintenance tasks, processes, procedures, and programs. These audits provide a systematic, coordinated method of investigating known deficiencies, evaluating the quality of workmanship, and determining the adequacy of and adherence to technical publications and instructions.

QA uses special audits to monitor maintenance programs and processes specifically assigned to QA for monitoring. In addition, QA conducts special audits of periodic inspections, testing, and servicing of aircraft by organizational maintenance activities. The QA officer normally directs special audits.

Quality assurance develops audit forms with checklists for each work center. The QA division also prepares an audit MI and includes the audit checklists as enclosures to the MI.

Upon completion of an audit, QA reviews the findings with the work centers involved. QA submits a report of the findings, with recommendations when required, to the AMO with a copy to the cognizant division(s). Records of audits are maintained for 1 year. Follow-up procedures ensure that discrepancies found during a QA audit are resolved in a timely fashion.

### **Maintenance Department or Division Safety**

The QA division is assigned the overall responsibility for the maintenance department safety. The intent of this program is to assist in the coordination of the total safety effort.

The maintenance department safety program helps to identify and eliminate hazards. Effectiveness and safety result when properly trained personnel use properly designed equipment and follow procedures under competent supervision. It is an **all hands** effort.

Any safety effort must address aviation and industrial safety. OPNAVINST 3750.6 contains the instructions for maintenance personnel participation in command aviation safety programs. It also contains the instructions for investigating and reporting naval aviation hazards that are not reportable under the NAMP. Even though OPNAVINST 3750.6 calls for specific reports, you still have to follow reporting procedures called for in the NAMP.

Other references you may use in relation to maintenance department safety are as follows:

- *Navy Occupational Safety and Health Programs for Forces Afloat*, OPNAVINST 5100.19, which contains safety precautions to be followed while aboard ship.
- *Standard Organization and Regulations of the U. S. Navy*, OPNAVINST 3120.32, which contains the standards for organizing a ship/station/squadron's

safety department and information on billet descriptions and responsibilities.

- *NAVAIROSH Requirements for the Shore Establishment*, NAVAIR A1-NAOSH-SAF-000/P-5100-1, which contains safety precautions to be followed while ashore.

QA's responsibilities to the maintenance department safety program are as follows:

- Disseminate safety posters and literature.
- Report all hazards, mishaps, and unsafe practices in the department.
- Conduct safety meetings within the department, at least monthly.
- Coordinate aspects of safety with the aviation safety officer.
- Participate in the activity's safety surveys and stand downs.

When a report is required by OPNAVINST 3750.6, the QA division collects and provides maintenance and material data necessary for preparation of required reports.

*Q29. What programs are managed by quality assurance?*

*Q30. What are the two categories of audits performed by Q/A?*

*Q31. Upon completion of an audit, the findings are forwarded to the AMO, with a copy going where?*

*Q32. How long are past audits maintained by Q/A?*

*Q33. In addition to reporting naval aviation hazards in accordance with OPNAVINST 3750.6, you still must follow reporting procedures called for in what manual?*

*Q34. With regard to maintenance department safety, what does the Q/A division have a responsibility to do at least monthly?*

### **The Naval Aviation Maintenance Discrepancy Reporting Program (NAMDRP)**

NAMDRP is the method for reporting hazardous deficiencies in material, publications, substandard workmanship, and improper QA procedures.

The QA division manages the program and assists the various work centers in determining if one or more of these reports are needed for a maintenance problem

or occurrence within the activity. They are also responsible to review all HMRs, EI requests, QDRs, and TPDRs to ensure they are accurate, clear, concise, and comprehensive. The work center supervisor provides assistance to the QA representative with information needed to complete the message request.

The QA division also initiates and maintains a report log and assigns a report control number (RCN) to each NAMDRP report. RCNs are assigned sequentially throughout the calendar year, regardless of the type of report.

The RCN is composed of 12 elements as follows:

- Element (1) is the Service Designator code of the originating activity. Refer to the OPNAVINST 4790.2 for Service Designator codes.
- Elements (2) through (6) are the Unit Identification Code (UIC) of the originating activity, followed by a dash (-).
- Elements (7) and (8) are a two-character identification of the calendar year, followed by a dash (-).
- Elements (9) through (12) are the locally assigned "control numbers." These numbers are sequential, beginning with 0001 each calendar year.

The various reports required under the NAMDRP are as follows:

- Hazardous Material Report (HMR)
- Engineering Investigation (EI) request
- Quality Deficiency Report (QDR)
- Technical Publication Deficiency Report (TPDR)
- Aircraft Discrepancy Report (ADR)

The aviation safety officer, with assistance from QA, reviews all correspondence concerning aircraft, ground, flight, flight-related, and explosive mishaps.

All hands have a responsibility to be alert for safety-related defects or discrepancies, which is the primary reason for submitting each report.

If a report meets the criteria for an HMR and warrants an EI Request, a Category (CAT) I QDR, or TPDR, is sent as a dual message report.

Exceptions to the NAMDRP and its reporting procedures are as follows:



- Changes or corrections to the Naval Air Training and Operating Procedures Standardization (NATOPS) manuals or tactical manuals are reported by using procedures found in OPNAVINST 3710.7 and NAVAIRINST 3710.10 using OPNAV 3710/6.

- Deficiencies resulting from incorrect preservation, packaging, marking and/or handling (when reported by supply activities) or deficiencies in shipment that are the result of overage, shortage, expired shelf life, or misidentified material are reported according to instructions found in NAVSUPINST 4440.179.

- Locally procured material found to be deficient by the procuring activity is reported according to instructions contained in NAVSUPINST 4440.189.

- Deficiencies in letter-type instructions and notices are reported by letter to the sponsor. Discrepancies in OPNAVINST 4790.2 are reported by naval letter to Naval Aviation Maintenance Office (NAMO) (Code 46), via the chain of command.

- Incorrect source, maintenance, and recoverability (SM&R) codes are reported according to NAVAIRINST 4423.11.

- Recommendations for improvements in procedures that do not result from incorrect information contained in publications are reported by letter to Naval Air Technical Services Facility (NAVAIRTECH-SERVFAC).

- Explosive incidents, dangerous defects, and malfunctions or failures involving explosive systems, launch devices, and armament weapons support equipment are reported under OPNAVINST 8600.2 as an Explosive Mishap Report (EMR) or a Conventional Ordnance Deficiency Report (CODR). These reports still fall under the NAMDRP for accounting and monitoring purposes.

A brief description of each of the programs of the NAMDRP is contained in the following paragraphs.

**HAZARDOUS MATERIAL REPORT.**—This report provides a standard method for reporting material deficiencies that, if not corrected, could result in death or injury to personnel, or damage to or loss of aircraft, equipment, or facilities. Report such incidents regardless of how or when the discrepant condition was detected. Submit an HMR priority precedence message within 24 hours of discovery under one or more of the following conditions:

- Malfunction or failure of a component that, if not corrected, could result in death or injury to personnel, or damage to or loss of aircraft, equipment, or facilities. In case of a naval aircraft mishap, as defined in OPNAVINST 3750.6, submit required reports according to that instruction. The submission of reports required by OPNAVINST 3750.6 does not eliminate any of the requirements for submission of reports required by the NAMP.

- A configuration deficiency discovered in aeronautical equipment (aircraft, SE, components, etc.) that constitutes a safety hazard.

- An urgent action or assistance required and a corrective action completed at an early date because of an operational requirement.

- A system malfunction or failure may occur because of a part design, which might allow the part to be installed improperly.

- A potential or experienced in-flight or on-the-ground loss of aircraft parts in which maintenance or material factors are involved. Use the term *things falling off aircraft (TFOA)* when referring to such incidents. TFOA includes incidents generally categorized in other areas, such as a foreign object damaged engine, which sheds parts, or a helicopter rotor blade pocket failure.

**ENGINEERING INVESTIGATION.**—EIs apply to all aircraft and weapons systems, their subsystems, equipment, components, related SE, special tools, fluids, and materials used in operating the equipment. The three types of EIs are (1) disassembly and inspection, (2) material analysis, and (3) engineering assistance.

Submit EI requests under one or more of the following conditions:

- Safety is involved. This includes EI requests prepared in conjunction with aircraft mishaps, and HMRs when it is evident that an unsafe condition exists.

- Additional technical or engineering information is required to complete an aircraft mishap investigation.

- Aircraft readiness is seriously impaired due to poor material reliability (including SE).

- A component is rejected through the Joint Oil Analysis Program (JOAP) after authorized repairs are attempted and exhausted at the O and I levels of maintenance.

- When environmental issues force material or process changes that conflict with existing publications or TDs.

- When directed by higher authority.

Submit the EI request by routine precedence message within 5 working days after discovery of the deficiency unless combined with the HMR, in which case the combined report is to follow HMR reporting criteria. The supporting supply department and the CFA supply department are information addressees on the EI message.

**QUALITY DEFICIENCY REPORT.**—This report provides maintenance activities with a method for reporting deficiencies in new or newly reworked material. Unless the materials are under warranty, failures must have occurred at zero operating time, during initial installation, operation, test, check, turnup, or first flight. It differs from the EI program in that it reports on possible deficiencies in quality assurance during the manufacturing or rework process. The goal is to improve the quality of work done by naval aviation depots (NAVAVNDEPOTs), contractors, and subcontractors returning reworked material to supply stock.

There are two types of QDRs.

- CAT I. A quality deficiency which will, or may, affect safety of personnel, impair the combat efficiency of an individual or organization, or jeopardize mission accomplishment.

- CAT II. All quality deficiencies that are assessed to have significant and widespread material or human resource impact and do not affect the conditions of a CAT I.

CAT I QDRs are reported by routine precedence message within 1 working day after the discovery of the deficiency unless combined with an HMR. A combined HMR CAT I QDR follows HMR reporting guidelines.

CAT II QDRs are submitted on an SF 368 to the CFA within 5 working days of the discovered deficiency.

**TECHNICAL PUBLICATION DEFICIENCY REPORT.**—This report applies when a technical publication deficiency is detected that, if not corrected, could result in death or injury to personnel, or damage to or loss of aircraft, equipment, or facilities. The action addressees for the message report is NAVAIRTECHSERVFAC and the CFA for the

aircraft weapons system or item being reported. If the CFA for the weapons systems or material cannot be determined, the action addressee is NAVAIR-TECHSERVFAC. This report is a CAT I TPDR and must be submitted within 24 hours of the discovered deficiency.

A CAT II TPDR is a simplified procedure for reporting technical publication deficiencies. Publication deficiencies include technical errors, wrong measurement values, incorrect use of support equipment, wrong sequence of adjustments, part number errors or omissions, and microfilm deficiencies, such as poor film quality.

Technical publications include MRCs, checklists, Work Unit Code (WUC) manuals, MIMs, illustrated parts breakdowns (IPBs), and other technical manuals. The TPDR program does not apply when deficiencies in instructions or notices are reported. Submit improvement procedures that do not result from incorrect information contained in the publication but are recommendations by letter to NAVAIR-TECHSERVFAC.

**AIRCRAFT DISCREPANCY REPORT.**—The ADR is a method for reporting defects discovered in newly manufactured, modified, or reworked aircraft that require immediate attention to ensure acceptable standards of quality in aircraft maintenance and rework procedures. The cognizant defense plant representative office, administrative contracting office, or NAVAVNDEPOT will enclose sufficient copies of the ADR form (Standard Form 368) with envelopes preaddressed, in each aircraft logbook for delivery with the aircraft. Additionally, they ensure that a copy of the previous reporting custodian's work request is furnished to the ferry pilot and functional wing. Naval Aviation Depot Operations Center (NAVAVNDEPOTOPSCEN) is the ADR screening point on aircraft commercially reworked under the procuring contract office.

An acceptance inspection is performed and a functional check flight flown as soon as possible after the aircraft is delivered and prior to maintenance (other than required to complete the acceptance inspection) or further flight. Only those discrepancies noted by the ferry pilot or crew and those found during the acceptance inspection and check flight are reported.

In reporting the initial acceptance of an aircraft, use "Initial Acceptance Inspection of Aircraft" as the subject of the Standard Form 368. Submit this initial

report within 5 working days of the acceptance check flight. A supplemental report, if needed, must be submitted not later than 30 days after completion of the check flight.

### Support Equipment Misuse/Abuse

SE Misuse/Abuse forms can be submitted by anyone witnessing misuse or abuse (fig. 6-2).

The division of the individual originating the report retains a copy of the SE Misuse/Abuse report. The report is sent to the organization that has Individual Material Readiness List (IMRL) reporting responsibility for the SE. A copy of the report is sent to the CO of the command to which the offender is attached and/or the CO of the command that held custody of the item where the misuse or abuse occurred for appropriate action. As a minimum, the QA division

<b>OPNAV 4790/108 (S-2) (BACK)</b>			
<b>FIRST ENDORSEMENT</b>			<b>DATE</b>
<b>FROM:</b>			
<b>TO:</b>			
<b>VIA:</b>			
<b>SUBJ: MISUSE/ABUSE</b>			
<b>I. ACTION TAKEN/RECOMMENDATIONS</b>			

  

<b>SUPPORT EQUIPMENT MISUSE/ABUSE</b>			<b>CONTROL NO.</b>
<b>OPNAV 4790/108 (S-2) (FOR AMRL J.F. 617.953)</b>		<b>FROM</b>	
<b>TO</b>		<b>CONTROL NO.</b>	
<b>THE FOLLOWING INFORMATION IS SUBMITTED IN REGARDS TO A REPORT OF MISUSE/ABUSE:</b>			
<b>PERSON WHO MISUSED ABUSED EQUIPMENT</b>	<b>NAME</b>	<b>RANK/RATE</b>	
	<b>ORGANIZATION/UNIT</b>	<b>SE LICENSE NO.</b>	
	<b>GOVT OPERATOR LICENSE NO.</b>		
<b>LOCATION AND EQUIPMENT INVOLVED</b>	<b>LOCATION</b>	<b>TYPE EQUIPMENT PR/PEN</b>	<b>TIME</b>
	<b>EQUIPMENT SERIAL NO.</b>		<b>DATE</b>
	<b>JCH</b>		
<b>NARRATIVE DESCRIPTION</b>			
SAMPLE			
<b>SIGNATURE AND TITLE</b>			

  

<b>PERSON CITING MISUSE/ABUSE</b>	<b>NAME</b>	<b>RANK/RATE</b>
	<b>ORGANIZATION/UNIT</b>	
<b>WAS SE LICENSE CONFISCATED ?</b> <input type="checkbox"/> YES <input type="checkbox"/> NO <b>REMARKS</b>		
<b>IF YES, LICENSE IS BEING HELD BY:</b>		
<b>SIGNATURE AND TITLE OF REPORTING OFFICIAL</b>		<b>DATE</b>

AMR00062

Figure 6-2.—SE Misuse/Abuse Form (OPNAV 4790/108).

of the command receiving the report conducts an investigation. Also, QA performs an analysis to provide appropriate recommendations for corrective action.

### **Aviation Gas Free Engineering (AVGFE)**

The purpose of the AVGFE program is to ensure a safe environment when aeronautical fuel systems are worked on. NAVAIR 01-1A-35 outlines requirements for the AVGFE program. Technicians certified under the AVGFE program must be qualified QARs or CDQARs and have graduated from an approved AVGFE program course. O-level activities normally provide their own AVGFE technicians; however, those activities with less than three gas free engineering (GFE) requirements in a 6-month period may request the services of the supporting I-level AVGFE technician.

- Q35. What is the Naval Aviation Maintenance Discrepancy Reporting Program?*
- Q36. What division assists the aviation safety officer in reviewing all correspondence about aircraft, ground, flight, or flight-related mishaps and explosive mishaps?*
- Q37. Who has the responsibility to be alert for safety related defects or discrepancies?*
- Q38. OPNAVINST 3710.7 contains procedures to report discrepancies in what type of publication?*
- Q39. If a system failure or malfunction occurs because of a part design, which could allow improper installation of the part, an HMR priority precedence message must be submitted within what time frame?*
- Q40. What term should be used in conjunction with an HMR when an aircraft part is lost in flight?*
- Q41. What are the three types of engineering investigations (EIs)?*
- Q42. What type of report provides activities with a means of reporting deficiencies in new or newly reworked material?*
- Q33. How long does the accepting activity have to submit a supplemental ADR?*
- Q44. Where is the original misuse/abuse report sent?*

### **QUALITY ASSURANCE MONITORING**

The QA division monitoring includes the continuous collection and distribution to cognizant personnel of all messages, letters, instructions, and other information concerning the programs or processes being monitored.

The QA division does not manage any of these programs and processes. However, they are responsible for overall surveillance of these programs and processes to identify problems and to verify compliance. Audits are one of the tools used in monitoring these programs and processes. QA gives continuous attention to program performance. They prepare checklists that describe the specific functions needed to effectively monitor each assigned program and process. These checklists are the same for O- and I-level maintenance with a few exceptions.

QA monitors the programs and processes listed below:

- FOD
- Fuel surveillance
- Joint Oil Analysis Program (JOAP)
- Aviators' breathing oxygen (ABO)
- Hydraulic contamination control
- SE Operator Training/Licensing and SE Planned Maintenance Systems (PMS)
- SE testing
- Calibration
- Nondestructive inspection (NDI)
- Tool Control Program
- Corrosion prevention and control
- Plane captain qualification
- Tire and Wheel Maintenance Safety
- Individual Component Repair List (ICRL)
- Egress system checkout
- Explosives Handling Personnel Qualification and Certification Program
- Electrostatic Discharge (ESD) Control/Prevention Program
- Miniature/microminiature (2M)
- Laser hazard control

- Aeronautical Equipment Welder Certification and Recertification
- Vibration analysis
- Aircraft battle damage repair (ABDR)
- Enhanced Comprehensive Asset Management System (ECAMS)

Under the NAMP, local MIs must show the responsibilities of personnel concerning these programs and processes. The QA division should use the MI with the checklists to monitor each of these programs and processes. These programs and processes are covered in detail in the NAMP. Some of these programs and processes that are included in the NAMPSOP do not require additional instructions or maintenance instructions (MIs). As new instructions are included in the NAMPSOP, existing

MIS will be discarded. Refer to the NAMP for further information on NAMPSOP.

## SUMMARY

Throughout this chapter, we have discussed the numerous responsibilities of the work center supervisor as well as many of the programs and responsibilities of the QA division. This is by no means all inclusive. To ensure mission accomplishment, both positions require dedication, diligence, and, most of all, experience. So when you become the work center supervisor, remember you are ultimately responsible for the work performed by your personnel, so take the initiative to stay involved in every aspect. When you become a quality assurance representative, remember that you are there to assist, train, and monitor, not just to be a policeman.

## ANSWERS TO REVIEW QUESTIONS

- A1. *Seeing that the job is done correctly, safely, and efficiently with no waste of materials.*
- A2. *Operate with maximum efficiency and safety, operate with minimum waste an expense, and operate free from interruption and difficulty.*
- A3. *Update equipment as old models become obsolete.*
- A4. *Through an effective and continuing training program.*
- A5. *Operating with minimum expense and waste.*
- A6. *A means of relieving the work center supervisor of the details of a task.*
- A7. *Scheduled maintenance is maintenance required by hours, calender periods (days or weeks), and starts. Unscheduled maintenance is maintenance that occurs on aircraft other than scheduled.*
- A8. *The daily maintenance meeting.*
- A9. *Determine deficiencies, analyze discrepancy trends, prescribe inspection procedures, and determine the quality of maintenance.*
- A10. *Eliminating maintenance failures before they happen.*
- A11. *Prevention, knowledge, and special skills.*
- A12. *A periodic or special evaluation of details, plans, policies, procedures, products, directives, and records.*
- A13. *The success or failure in achieving high standards of quality.*
- A14. *At the time the task is assigned.*
- A15. *Quarterly.*
- A16. *To ensure the purpose and objective of the check flight are clearly understood.*
- A17. *Quality assurance division.*
- A18. *The size of the unit and the number of work shifts.*
- A19. *Quality assurance representatives.*
- A20. *Normally, an E-6 or above is assigned as a QAR.*
- A21. *90 days.*
- A22. *Never.*
- A23. *The officer in charge.*
- A24. *A Q/A stamp.*
- A25. *Local commands make the decision and annotate the master and work center MRC decks.*
- A26. *Receiving or screening inspection, in-process inspection, and final inspection.*
- A27. *Functional check flights.*
- A28. *When the discrepancy involves safety of flight.*

- A29.
  - a. QA audits.
  - b. CTPL.
  - c. Department/division safety.
  - d. NAMDRP.
  - e. SE misuse/abuse.
  - f. Aviation gas free engineering (AVGFE).
- A30. Work center audits and special audits.
- A31. The cognizant division.
- A32. One year.
- A33. NAMP, OPNAVINST 4790.2.
- A34. Conduct maintenance department safety meetings.
- A35. The NAMDRP is a method for reporting hazardous deficiencies in material, publications, substandard workmanship, and improper Q/A procedures.
- A36. Quality assurance division.
- A37. All Hands.
- A38. Naval Air Training and Operating Procedures Standardization (NATOPS) manuals.
- A39. Within 24 hours of discovery.
- A40. TFOA (Things falling off aircraft).
- A41. Disassembly and inspection, material analysis, and engineering assistance.
- A42. Quality deficiency report (QDR).
- A43. Within 30 days after completion of the check flight.
- A44. The report is forwarded to the organization that has IMRL reporting responsibility for the item abused.

